CLAIMS

What is claimed is:

1. A method of reconstructing data from higher moment data, the method comprising:

performing a finite Radon transform on the higher moment data;

generating an average function to allow inversion of the Radon transform in one step;

correlating the Radon transform output at each point;

calculating a resultant set of duplications using the correlation process to generate a new average function;

summing partial backprojections of the Radon transform at each point; and

subtracting the new average function for each point from the sum of the partial backprojections at that point.

2. The method of claim 1 wherein performing the Radon transform results in data selected from the group consisting of three dimensional data, two dimensional data, and n-dimensional data where n is greater than three.

3. The method of claim 1 wherein the average function is calculated based on geometry and used for multiple reconstructions.

4. The method of claim 1 wherein the method of reconstructing data from higher moment data including the step of backprojecting a constant function allows geometries with no closed form to be trained.

5. A system for reconstructing data from higher moment data, the system comprising:

means for performing a finite Radon transform on the higher moment data;

means for generating an average function to allow inversion of the Radon transform in one step;

means for correlating the Radon transform output at each point;

means for calculating a resultant set of duplications using the correlation process to generate a new average function;

means for summing partial backprojections of the Radon transform at each point; and

means for subtracting the new average function for each point from the sum of the partial backprojections at that point.

6. A computer readable medium comprising instructions, which when executed on a processor, perform a method of reconstructing data from higher moment data, the method comprising:

performing a finite Radon transform on the higher moment data;

generating an average function to allow inversion of the Radon transform in one step;

correlating the Radon transform output at each point;

calculating a resultant set of duplications using the correlation process to generate a new average function;

summing partial backprojections of the Radon transform at each point; and

subtracting the new average function for each point from the sum of the partial backprojections at that point.

7. An apparatus for reconstructing data from higher moment data, the apparatus comprising:

a Radon transform module to perform a finite Radon transform on the higher moment data;

an average function generator to generate an average function to allow inversion of the Radon transform in one step, the average function generator coupled to the Radon transform module;

a correlation module to correlate the Radon transform output at each point, the correlation module coupled to the Radon tranform module;

a calculator to calculate a resultant set of duplications using the correlation process and to generate a new average function, the calculator coupled to the correlation module;

a summing module to sum partial backprojections of the Radon transform at each point, the summing module coupled to the Radon transform module; and

a subtracting module to subtract the new average function for each point from the sum of the partial backprojections at that point, the subtracting module coupled to the summing module and the calculator.

8. The apparatus of claim 7 wherein the Radon transform module outputs data selected from the group consisting of three dimensional data, two dimensional data, and n-dimensional data where n is greater than three.

9. The apparatus of claim 7 wherein the average function is calculated based on geometry and used for multiple reconstructions.

10. The apparatus of claim 7 wherein a plurality of geometries with no closed form are trained using the apparatus for reconstructing data from higher moment data by backprojecting a constant function.